

THE INVENTION CLAIMED IS

1. In a process for depositing low work function material on a substrate, the improvement comprising:
ablating onto the substrate material from a target of low work function material by laser ablation using short-wavelength photons.
2. The improvement of Claim 1, additionally including rotating the target.
3. The improvement of Claim 1, additionally providing a holder for the substrate, which has characteristics selected from the group consisting of rotatable, tiltable, heatable, and coolable.
4. The improvement of Claim 1, additionally including controlling the elemental composition of the deposited low work function material by controlling the gaseous environment in which the ablation is performed.
5. The improvement of Claim 4, wherein the elemental composition of the deposited low work function material is controlled by controlling the composition of the target.

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6. The improvement of Claim 1, wherein the short-wavelength photons are at or below visible wavelength.

7. The improvement of Claim 6, wherein the wavelength is in the range of 200 to 550 nm.

8. The improvement of Claim 1, additionally including cleaning the surface of the substrate prior to depositing the low work function material thereon.

9. The improvement of Claim 1, additionally including generating a flow of molecules directed at the surface of the substrate.

10. The improvement of Claim 1, additionally including removing surface contaminations on the substrate prior to depositing the low work function material thereon.

11. The improvement of Claim 10, wherein removing surface contaminations is carried out by at least one of the group consisting of heating the substrate such that the contamination volatilizes, burning the contamination by the introduction of a suitable reactive gas, by ion bombardment with suitable noble gas ions.

12. The improvement of Claim 1, additionally including heating the surface of the substrate by laser energy.

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13. The improvement of Claim 1, additionally including controlling the gaseous environment during ablation of the target.

14. The improvement of Claim 13, wherein controlling the gaseous environment is carried out by introducing gases into the environment and directing the gases onto the surface of the substrate making the gases more reactive by dissociating the gases or changing the gases into radicals on their way to the substrate's surface.

15. A process for depositing low work function surface layers, comprising:
providing a deposition chamber
providing in the chamber a target containing a low work function material,
positioning in the chamber a substrate on which low work function material is to be deposited,
controlling the environment of the deposition chamber, and
laser ablating the target using photons at or below visible wavelength.

whereby a surface layer of low work function material is deposited on the substrate.

16. The process of Claim 15, additionally including rotating the target.

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